GLENN L. MARTIN COMPANY,
Titan Missile Test Facilities, Captive Test Stand D-4
Waterton Canyon Road and Colorado Highway 121
Vicinity of Lakewood
Jefferson County
Colorado

HAER No. CO-75-D

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Denver, Colorado 80225-0287

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Significance: By providing a facility where the Titan I intercontinental ballistic missiles could be "flown on the ground" under controlled conditions prior to actual launch, Captive Test Stand D-4 played a key role in the development of one of the largest and most destructive weapons in the American nuclear deterrent force.

Description: Captive Test Stand D-4 is located in a saddle overlooking a wide draw near the northwest corner of the Air Force property at the Martin plant. The test stand was designed around a pair of 25-foot wide, 38-foot high flame deflectors anchored to massive concrete foundations. Resembling truncated ski jumps, the deflectors have sloping, concrete-faced deflector panels supported by C-shaped, structural steel side frames. Stretched across the hillside behind the deflectors is a thick, reinforced counterfort that forms the outer wall for two large, bunker-like, equipment rooms. The rectangular equipment rooms are set into the slope and covered by a concrete slab. Two large, gabled, one-story, prefabricated steel support buildings stand adjacent to the slab. When the test stand was in use, a bridge-like steel work platform spanned the gap between the counterfort and the flame deflectors. Rising above the work platform were the two tilting, structural steel erector towers that positioned the missile stages for test firing. A tripodal tubular steel "umbilical tower" next to each flame deflector supported the electrical and propellant supply lines that sustained the missile during testing. Propellants were stored in large tanks near the test stand.

History: Test Stand D-4 was one of four identical captive firing facilities erected at Martin's Denver plant between 1957 and 1959. Designed by the Aerojet-General Corporation of Sacramento, California, the Denver facilities incorporated virtually every feature of the launch pads used for flight testing at Cape Canaveral. The test stands were built by the George A. Fuller Company, general contractor for the Martin plant. Steel components were fabricated by the Kaiser Steel Corporation.

Although Captive Test Stand D-4 had initially been scheduled for completion in October 1957, Captive Test Stand D-4 was not officially activated until August 1959. Following activation, Stand D-4 was used primarily for "compatibility firings." During these tests, the missiles' first and second stages were erected side by side, connected by electrical cables and fired in a sequence that closely simulated actual flight conditions. Once the compatibility firing had been successfully completed, the missile was considered ready for flight testing. After the stand was deactivated in the mid-1960s, the components of its steel superstructure were salvaged for scrap, and the two support buildings at the site were dismantled.

Sources: Frank Beal, "Complex B Active Since Last September; Now in Sequenced Firing Phase," Martin Missile 4 (24 July 1959): 3. The official activation date is listed in General Bernard A. Schriever, "Titan," [ca. 1960], page 11, TMs [photocopy], included in the collection of the Air Force Historical Research Agency (HRA), Maxwell Air Force Base, AL. File 168.7171-128. Other sources include original project blueprints located in the Plant Engineering Department at Martin-Marietta Astronautics Group, Denver, CO. The Company's Photographics Department maintains a large collection of black-and-white and color photographs depicting construction, equipment, and test activities at the stands during the period 1955-1960. The best published description of the test stands appeared in Russell Hawkes, "Hardened Titan Bases Require Specialized Support," Aviation Week 72 (18 January 1960): 66-67, 69, 71, 77-78, 81, 83. The deactivation date is recorded in "Feb. 6, 1956-Feb. 6, 1966 -- Martin's First Decade in Denver," Martin News (11 February 1966): n.p.

Historians: John F. Lauber and Jeffrey A. Hess; Hess, Roise and Company, 1994.